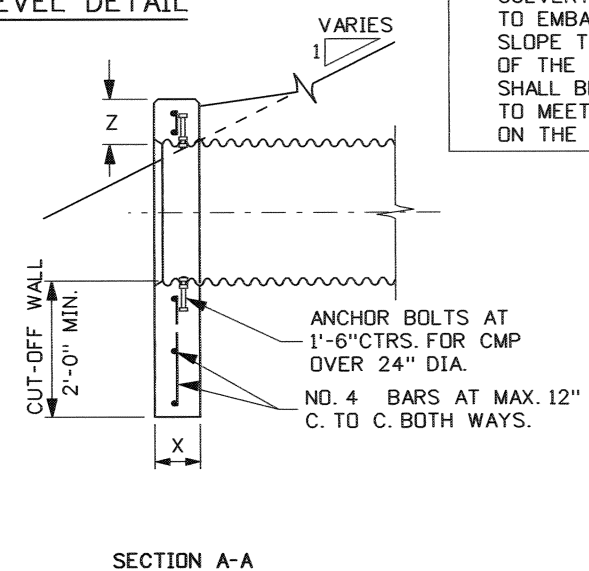
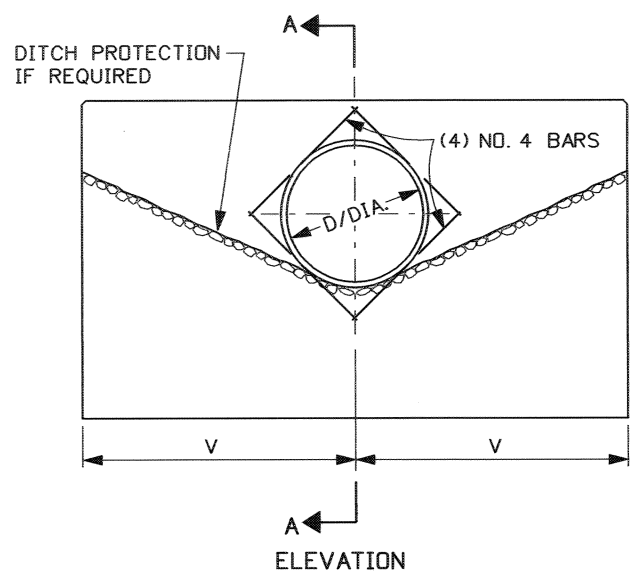
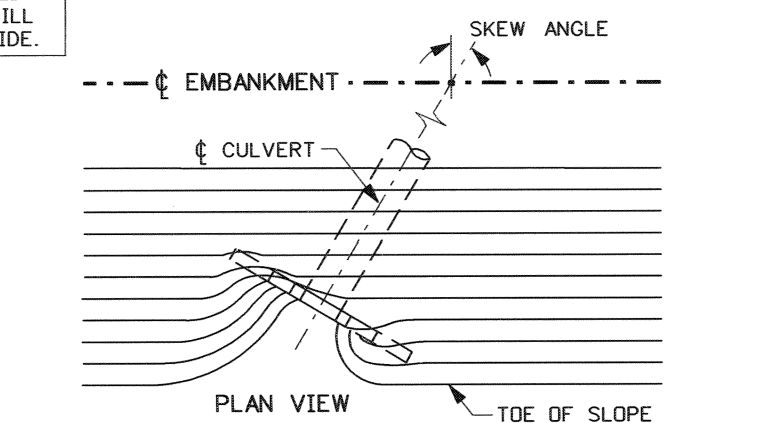
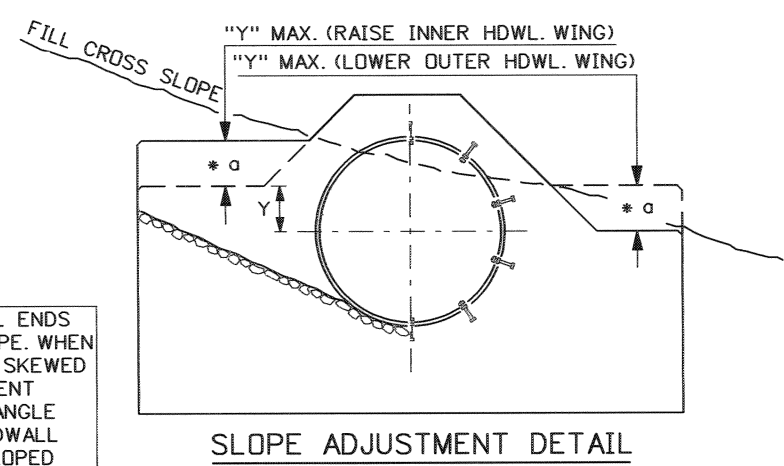


\* a ADJUST WALL ENDS TO FILL SLOPE. WHEN CULVERT IS SKEWED TO EMBANKMENT SLOPE THE ANGLE OF THE HEADWALL SHALL BE SLOPED TO MEET THE FILL ON THE HIGH SIDE.



INLET STRUCTURE (CULVERT SIZES 18" TO LESS THAN 36" DIA.)



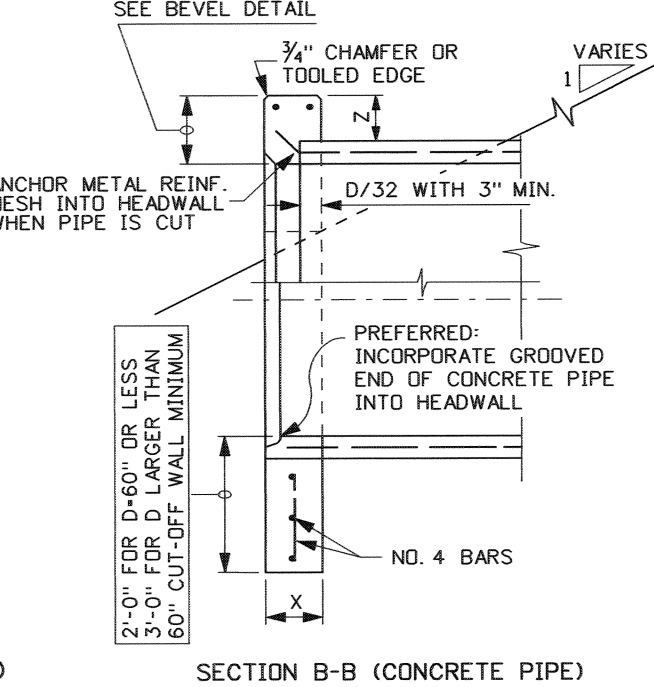
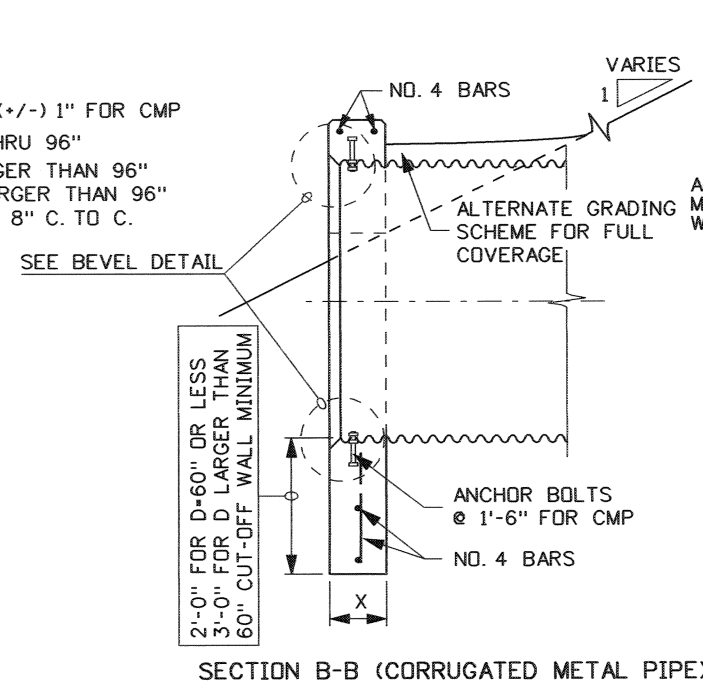
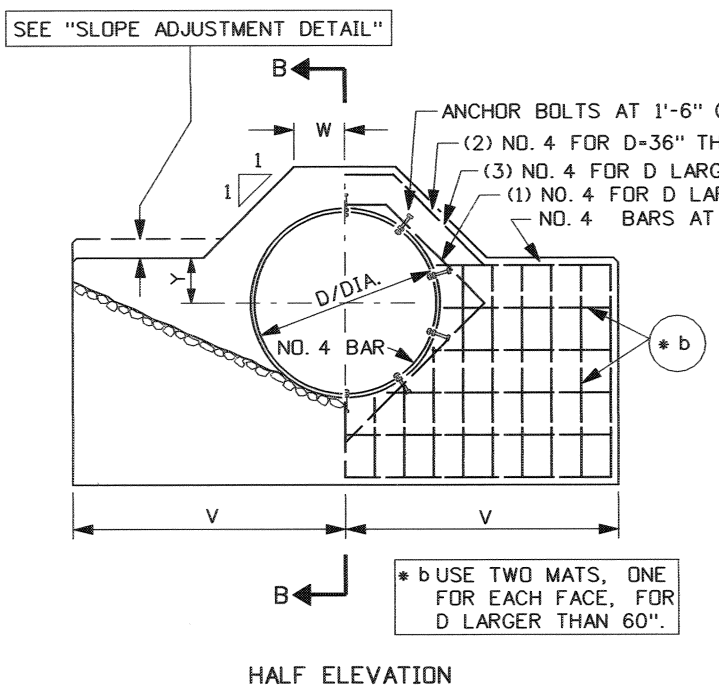
EMBANKMENT CONTOURS FOR SKEWED CULVERT

DIMENSION TABLE					
D=SIZE (DIA. IN.)	V (INCHES)	W (INCHES)	X (INCHES)	Y (INCHES)	Z (INCHES)
18	36	4	8	5	8
24	48	5	9	6	9
30	60	6	9	8	9
36	54	11	10	9	10
42	63	13	10	11	10
48	72	14	10	12	10
54	81	15	11	14	11
60	90	16	11	15	11
72	108	19	11	18	11
84	126	21	11	21	11
96	144	24	12	24	12
108	162	27	14	27	14
120	180	30	15	30	15
144	216	36	18	36	18
180	270	45	23	45	23

SUMMARY OF QUANTITIES					
D=SIZE (DIA. IN.)	CONCRETE (CU. YD.)	METAL REINF. (LBS.)	D=SIZE (DIA. IN.) CON'T.	CONCRETE (CU. YD.) CON'T.	METAL REINF. (LBS.) CON'T.
18	0.6	45	72	4.1	435
24	0.9	65	84	5.6	535
30	1.2	85	96	6.9	640
36	1.2	75	108	9.8	795
42	1.4	90	120	12.5	955
48	1.7	105	144	20.3	1,255
54	2.3	125	180	37.6	1,820
60	2.6	145			

NOTE: QUANTITIES SHOWN ARE FOR CORR. METAL PIPE (CMP)

- NOTES**
- ANCHOR BOLTS : BOLT AND NUT MATERIAL SHALL CONFORM TO ASTM A 307. BOLTS AND NUTS SHALL BE GALVANIZED AFTER FABRICATION IN ACCORDANCE WITH ASTM A 153. ANCHOR BOLTS ARE NOT REQUIRED FOR CONCRETE PIPE.
  - CUTOFF WALL: THE DEPTH OF WALL SHOWN ON THE PLAN MAY BE REDUCED IF ROCK IS ENCOUNTERED AT A HIGHER ELEVATION.
  - MULTIPLE PIPE INSTALLATIONS: TO PERMIT PLACING AND TAMPING OF BACKFILL MATERIAL, THE CLEAR SPACE BETWEEN PIPES SHALL BE ONE-HALF THE DIAMETER OF THE LARGER PIPE, ALTHOUGH IT MAY NOT EXCEED 3 FEET.
  - PIPING WHEN USING PERVIOUS BEDDING AND BACKFILL: IT IS DESIRABLE TO PREVENT SEEPAGE AND PIPING BY PLACING IMPERVIOUS MATERIAL AT THE INLET. CUT-OFF COLLARS MAY BE USED IN LIEU OF IMPERVIOUS MATERIAL.
  - USE ENTRANCE LOSS COEFFICIENT  $K_e=0.2$  FOR BEVELED ENTRANCE.
  - WHEN CULVERT IS SKEWED TO EMBANKMENT, THE EMBANKMENT MAY BE CONTOURED AS SHOWN.
  - THIS INLET IS TO BE USED ONLY OUTSIDE THE CLEAR ZONE, OR BEHIND GUARDRAIL.
  - ALL METAL REINFORCING SHALL BE NO. 4 BARS AND SHALL HAVE A MINIMUM COVER OF 2".
  - ALL EDGES TO HAVE 3/4" CHAMFER OR TOOLED EDGES.
  - NOT TO SCALE.



INLET STRUCTURE (CULVERT SIZES 36" - 180" DIA.)

REVISIONS							
NO.	DATE	BY	NO.	DATE	BY	NO.	DATE
1	1-97	MSM					
2	11-00	MSM					
3	7-02	MSM					
4	3-05	MSM					

SCALES SHOWN ARE FOR 11" X 17" PRINTS ONLY

CADD FILE NAME d2a\_0305.std

DRWG. ORIG. DATE: JANUARY, 1989

**IDAHO TRANSPORTATION DEPARTMENT**

BOISE IDAHO

*Thomas*  
ASSISTANT CHIEF ENGINEER (DEVELOPMENT)

*Steven C. Dickinson*  
CHIEF ENGINEER

STANDARD DRAWING

**CULVERT INLET HEADWALL**

**English**

STANDARD DRWG. NO.

**D-2-A**

SHEET 1 OF 1

REGISTERED PROFESSIONAL ENGINEER

*Lotwick I. Reese*

2360

3/7/05

STATE OF IDAHO

LOTWICK I. REESE